Remarks/Arguments

Referring to the final office action of 8/8/2007 rejecting all claims item I address each item is Claims Rejections – 35 USC $ 112.

2. I contend that my invention application clearly lays out how to build and use the invention. I believe that the use of terms in the claims that are not properly defined has lead to this confusion.

3. "The claims recite that the device eliminates non-condensable gasses, which is not supported by he specification as originally filed." This is an error on my part, in the original specification the "non-condensable gas" is Air. Paragraph 6 of the Original Specification clearly states the exclusion of air from the fluid loop.

In the claims, I also recite that "Steam is Condensing" steam being a condensable gas, in the original specification Paragraph 1 & 6, I used the term gas bubble that collapse and condense.

I have rewritten the claims to use the terms used in the original specification, Air and gas bubbles.

The following are excerpts from the original application submission of 2/27/2002 from "Detailed Description of Preferred Embodiment, Paragraphs 1, 6 & 9".

Paragraph 1 Original Specification

"DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention consists of a pressurized heat transfer loop, which operates well above the boiling point of water at one atmosphere, 212 degrees Fahrenheit (FIG. 1). The water is heated, by the sun, in the single, or double glazed, solar collector (1), an integral part of the collector is a set of damper, which are opened by pressure (15). These dampers are only open when the solar heat collected is more than the hot water tank can use. These dampers when opened allow outside air of less than 120 degrees Fahrenheit to flow over the absorber plate, where the sunlight is converted to heat and transferred into the heat transfer fluid. This airflow cools the absorber and stops the boiling. Then the dampers close and the absorber heats back up. The dampers open and close on a 2 to 5 minute cycle and only minor boiling is allowed to take place. This self-controlling feature is unique and allows the collector to protect it self, even if the fluid flow in the pressurized loop (17) stops. As **Alternatively to the dampers, or along with them one could use the system shown in (Fig 4, (29)), which is a pressurized side channel to the main pressurized heat transfer loop, which is at the uppermost point in the main fluid loop. As gas bubbles form in the solar collector they try to escape by going into**

the side channel heat exchanger. The fluid there is below the boiling point of the pressurized fluid and they collapse and condense. The fluid is the side channel is cooler, because the outer surface is exposed to the outside air. If no bubbles are forming in the solar collector, then there is no flow of fluid in the side channel and the fluid the side channel stays cool.

Paragraph 6 Original Specification

The invention also consists of a pressure relief and fluid overflow recovery system (Fig 2). and includes a pressurized fluid reservoir (3), a pressure cap to regulate the pressure in the system, and allow the overflow to return on system cool down at night (2), which is connected to a fluid overflow and recovery reservoir (4). The pressure of the fluid in the solar collector heat transfer loop is regulated by the pressure cap, which uses a spring to push against the fluid pressure over a fixed area. During normal daily operation when the sun is out, the heat transfer fluid expands as it heats from 75 degrees Fahrenheit to over 230 degrees Fahrenheit and when the pressure reaches the set pressure, i.e. 16 PSI, fluid overflows to the fluid overflow reservoir (21), which is vented to the atmosphere by a cap (30). **At night, when the fluid in the solar heat transfer system cools and contracts, fluid is drawn back into the heat transfer system to keep if full of fluid and keep air out. Air in the system increases the corrosion of the fluid loop.** This simple system allows the approximately 50% water / 50% antifreeze mixture in the solar heat transfer loop to heat up to over 212 degrees Fahrenheit, without boiling until it reaches almost 265 degrees Fahrenheit, at 16 PSI confinement pressure. This high temperature allows for heat to be transferred more efficiently into the hot water tank, using lower flow rates and an internal (or external) hot water tank heat exchanger.

Paragraph 9 Original Specification

The invention also consists of a boiling activated solar collector over-temperature protection system (Fig 4). The system consists of a liquid to air heat exchanger and a boiling gas separator. During normal operation they entire system is full of heat transfer fluid (21) and no boiling occurs. The liquid to air heat exchanger (29) is a side arm and normally has no fluid flow in it. Normally the fluid flows into the boiling gas separator from the solar collector and out of it down to the hot water tank. Under abnormal conditions such as circulating pump failure or the solar input being greater than the hot water tank can use, the solar collector will begin to boil. In this event the boiling gas separator (28) allows the gas bubbles to go into the liquid to air heat exchanger (29), which stirs the liquid in the heat exchanger, while condensing the boiling gas and heats it above outside air temperature and dissipates this heat to the outside air. **The filler tube (27) allows liquid to come from the liquid to air exchanger and be inserted below where the gas bubbles are being released in the boiling gas separator (28) keeping the collector fluid loop (17) full of liquid.**
The system allows a small amount of boiling to take place, which rejects heat to the atmosphere via the liquid to their heat exchanger. As long as boiling takes place the

liquid in the side arm heat exchanger will be heated by condensing the boiling gas. Only a small amount a fluid will be forced into a fluid overflow steam condenser (4). The advantage of this system is that it has no moving parts and can easily dissipate all of the heat that the solar collector can gather from the sun."

4. I have revised the claims to show that "eliminates non-condensable gasses" is really "excludes air from the fluid loop". I have also replaced consists with comprises.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully Submitted,

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